

EP 0281967

SEP 1988

88-258713/37 D18 F09

KIMBERLY CLARK CORP

KIMB 06.03.87

\*EP -281-967-A

06.03.87-US-022860 (14.09.88) A24d-01/02 D21h-05/16

Wrapper for a smoking device contg. a burn fuel element - has dual sheet construction

C88-115352 R(AT BE CH DE ES FR GB GR IT LI LU NL SE)

D(7-D) F(4-E, 5-A6)

**EXAMPLE**

An outer wrapper comprised 18% glass microfibres, 4%  $\text{TiO}_2$ , 8% Attagel (RTM; attapulgite clay), 70% cellulose fibres and was treated with 6.5-7% K citrate. Ash obtd. was strong and had colour and appearance of a conventional cigarette ash esp. when 5-15 wt. %  $\text{TiO}_2$  was included in the wrapper. Strength of ash was poor if clay was replaced by e.g.  $\text{CaSO}_4$ . (17pp1629MJDwgNo2/10)

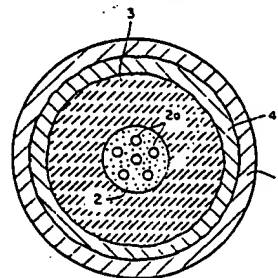
(E) ISR:- EP-133575 US4561454 US4461311 US4433697  
US2998012 EP-174645

Fuel element (2) e.g. a carbon fuel source and its ceramic fibre jacket (3) are surrounded by a cellulosic inner wrapper (4) and an outer wrapper (5) contg. 40-80 wt. % cellulosic fibres, 10-30% high temp. resistant microfibres e.g. glass fibres and 10-30% attapulgite clay mineral filler.

Opt. up to 10 wt. % of a burr enhancer e.g. Na or K citrate may be present in the outer wrapper (5). Pref. the mineral filler contains up to 10%  $\text{TiO}_2$ .

**USE/ADVANTAGE**

On smoking the inner wrapper produces a high permeability ash and has biased burn properties. Wrapper combination provides a throttling effect to the fuel element and burns to give ash similar to conventional cigarette ash. Wrappers have sufficient strength to support the assembly of components and are extinguished after 3-4 puffs.



EP-281967-A

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# INORGANIC SHEET COMPONENTS

## ASH STRENGTH

5	8.	18% glass 12% Calcium Sulfate	Fair to Poor Cracks	3
10	9.	12% glass 18% Calcium Sulfate	Fair to Poor Cracks	3
15	10.	30% Calcium Sulfate	Poor Curls, Cracks	1
20	11.	18% Calcium Sulfate 12% Fumed Alumina	Poor	1
25	12.	18% Calcium Sulfate 12% Attagel 40	Fair to Poor	2
30	13.	18% Fumed Alumina 8% Attagel 40 4% TiO <sub>2</sub>	Poor	1
35	14.	30 gsm 30% Fumed Alumina	No Strength	0
40	15.	30 gsm 30% CaCO <sub>3</sub>	No Strength	0
45	16.	18% Calcium Sodium Phosphate 6% Attagel 40 6% Fumed Aluminum	Fair to Poor	3
50	17.	18% Calcium Sodium Phosphate 12% Attagel	Good	4

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Thus it is apparent that there has been provided, in accordance with the invention, wrapper materials that fully satisfy the objections, aims, and advantages set forth above. While the invention has been described in conjunction with the specific embodiments thereof, it is evident that any alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description. Additionally, this flow does not depend on gas viscosity. Accordingly, it is intended to embrace all such alternatives, modifications, and variations as followed in the spirit and broad scope of the appended claims.

## Claims

1. Improved wrapper combination for a smoking article having a burn fuel element, said wrapper comprising,  
a cellulosic inner sheet enclosing said fuel element and adapted to burn under smoking conditions to produce a high permeability ash and having biased burn properties; and

an outer sheet surrounding said inner wrap and comprising 40 to 80 percent cellulose fibers, 10 to 30 percent high temperature resistant microfibers, and 10 to 30 percent mineral filler comprising attapulgite clay, and

said wrapper combination containing a burn enhancer in the range of from about 0 to 10 percent under smoking conditions providing a throttling effect to said fuel element and burning to produce an ash resembling a conventional cigarette ash in appearance.

2. The improved wrapper of Claim 1 wherein said mineral filler includes up to 10 percent of titanium dioxide.

3. The improved wrapper of Claim 2 wherein said high temperature resistant microfibers are glass microfibers.

4. The improved wrapper of Claim 3 wherein said glass microfibers have a diameter generally in the range of from about 0.7 to 5.0 microns.

5. The improved wrapper of Claim 4 wherein the burn enhancer is an alkali metal salt and is contained in said outer sheet in an amount between 3 and 10 percent by weight.

6. The improved wrapper of Claim 5 wherein said amount of burn enhancer is partially contained in said inner sheet and the remainder is contained in said outer sheet.

7. The improved wrapper of Claim 5 wherein the burn enhancer is selected from the group consisting of sodium citrate and potassium citrate.

8. The improved wrapper of Claim 7 wherein the amount of titanium dioxide in the outer wrapper is in the range of from about 2 to 8 percent.

9. The improved wrapper of Claim 7 wherein the outer wrapper maintains low permeability at temperatures in excess of 400°C and maintains pressure drop at temperatures in excess of 400°C.

10. The improved wrapper combination of Claim 7 further containing a few percent of a reagent selected from solid oxidizers and low melting, nonvolatile Lewis acids.

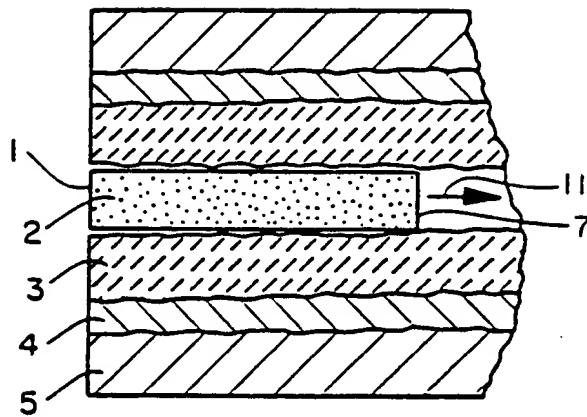


FIG. 1

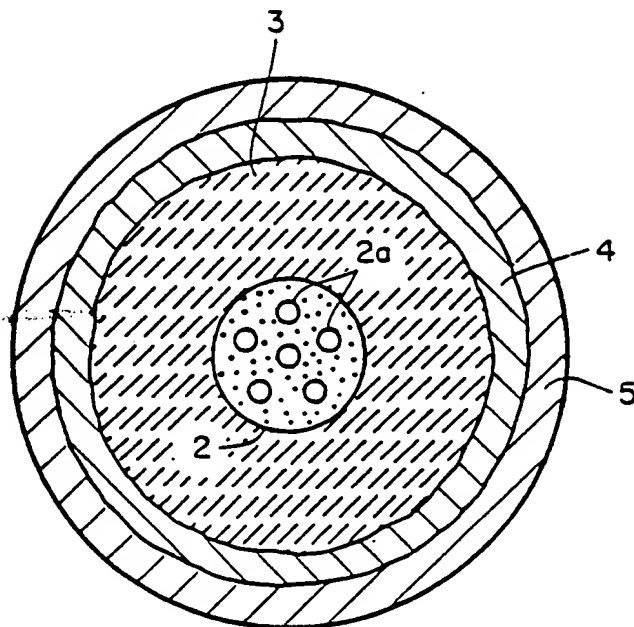


FIG. 2

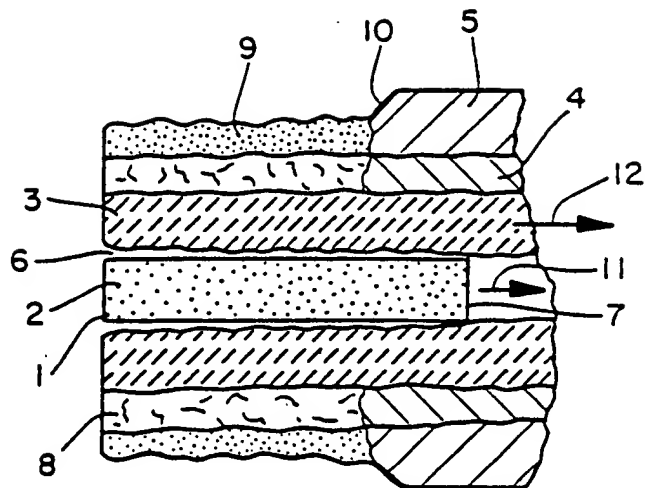


FIG. 3

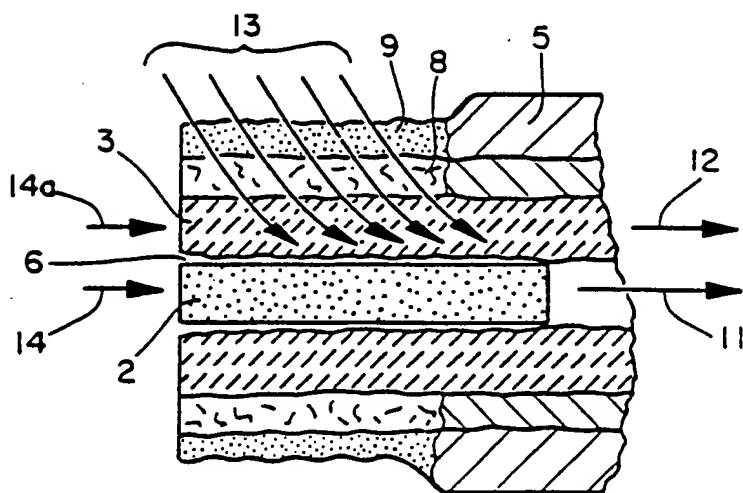


FIG. 4

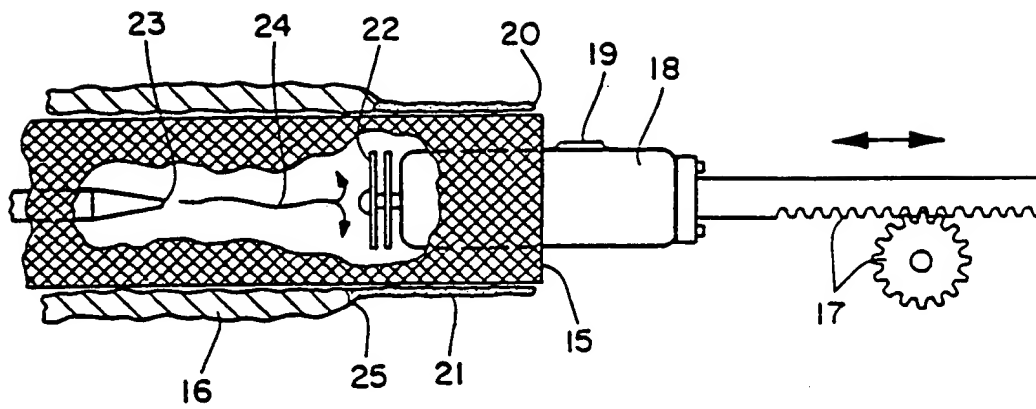


FIG. 5

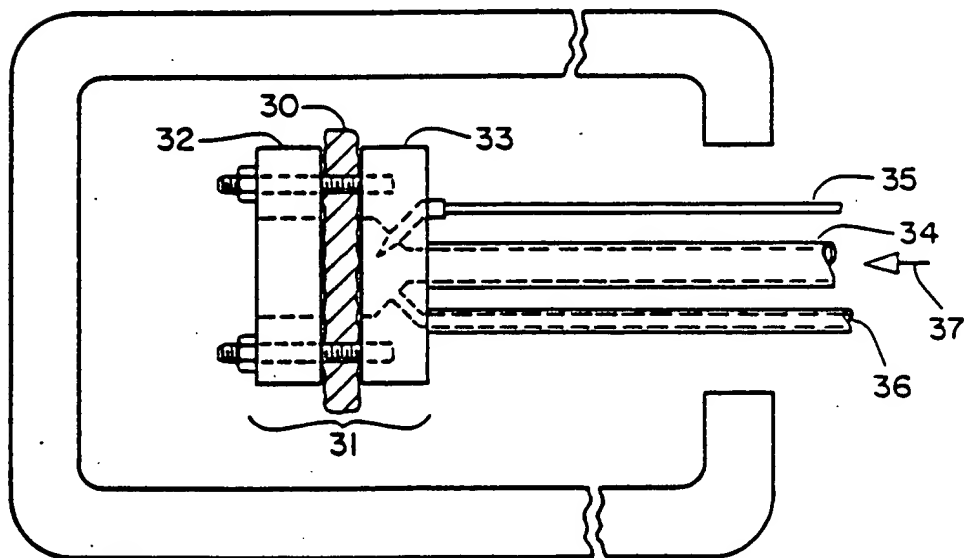


FIG. 6



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 88 10 3411

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	EP-A-0 133 575 (KIMBERLY-CLARK CORP.) * Figures 3,5; claims 2,4,6,8; page 7, lines 9-30; example 5 *	1,2,5-7	A 24 D 1/02 A 24 D 1/18 D 21 H 5/16
D,A	US-A-4 561 454 (H.E. GUESS) * Abstract *	1,5-7	
D,A	US-A-4 461 311 (J.H. MATHEWS et al.) * Abstract *	1,5,7	
D,A	US-A-4 433 697 (W.K. CLINE et al.) * Abstract; column 3, lines 15-26; example VI *	1,3,5	
A	US-A-2 998 012 (W.R. LAMM) * Whole document *	1,3	
D,A	EP-A-0 174 645 (R.J. REYNOLDS TOBACCO CO.) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			A 24 D D 21 H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07-06-1988	Examiner NESTBY K.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding			